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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/666,648	09/19/2003	Gopal Subray Revankar	16568	8501

7590
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12/21/2004

EXAMINER

BAREFORD, KATHERINE A

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 12/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n N .

10/666,648

Applicant(s)

REVANKAR, GOPAL SUBRAY

Examiner

Katherine A. Bareford

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 9/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Specification

1. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: the range of effective depth (claim 4) should be inserted in paragraph [0017] of the specification.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

- VB
3. Claims 1-~~8~~⁶ are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, lines 1 and 6, "finely" is vague and indefinite as to the size of the particles.

Neither the specification nor claims give any indication as to what size limitations are meant by "finely".

Claim 1, lines 1-2 and 7, "wear resistant" is vague and indefinite as to what is required for a material to be wear resistant. How much would "wear" have to be prevented or delayed?

Claim 1, line 3, "increased wear" is confusing as a "wear resistant alloy" is coated. Does applicant mean "increased wear resistance"?

Claim 1, lines 4-5, "an effective depth" is unclear as to what is required for the depth to be considered effective. If applicant means "effective in preventing the formation of liquid metal during the fusing step" (as in paragraph [0017] of the specification) the claim should so clarify.

Claim 6, lines 1-2, "wear resistant or corrosion resistant" is vague and indefinite as to what is required for a material to be wear resistant or corrosion resistant. How much would "wear" or "corrosion" have to be prevented or delayed?

The other dependent claims do not cure the defects of the claims from which they depend.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claim 6 is rejected under 35 U.S.C. 102(b) as being anticipated by Hodge (US 2774686).

Hodge teaches a method to apply an aluminum alloy coating to a substrate which can be a cast iron part. Column 1, lines 15-20 and column 3, lines 25-50. The aluminum alloy coating can be corrosion resistant, as it would protect the underlying cast iron part. Column 3, lines 25-35. The cast iron part to be coated can be decarburized before coating. Column 3, lines 50-75

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(see especially, lines 68-70). Then the aluminum alloy is applied to the decarburized area of the part by a process resulting in the coating adhering to the cast iron part. Column 4, lines 5-40.

6. Claim 6 is rejected under 35 U.S.C. 102(b) as being anticipated by Japan 2001-038791 (hereinafter '791).

'791 teaches a method to apply an nickel or cobalt alloy coating to a substrate which can be a cast iron part. Abstract. The alloy coating can be corrosion resistant and abrasion (wear) resistant. Paragraph [0001]. The cast iron part to be coated is decarburized before coating with the alloy. Abstract and paragraphs [0008], [0014]--[0017]. Then the alloy is applied to the decarburized area of the part by a process resulting in the coating adhering to the cast iron part. Abstract and paragraphs [0008] and [0017].

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japan 2001-038791 (hereinafter '791) in view of Jaeger (US 4075392).

'791 teaches a method to apply an nickel or cobalt alloy coating to a substrate which can be a cast iron part. Abstract. The alloy coating can be corrosion resistant and abrasion (wear) resistant. Paragraph [0001]. The cast iron part to be coated is decarburized before coating with the alloy. Abstract and paragraphs [0008], [0014]--[0017]. The part is decarburized to an effective depth to prevent carbon and silicon diffusion problems. Paragraphs [0009] and [00011]. Then the alloy is applied to the decarburized area of the part. Abstract and paragraphs [0008] and [0017].

Claim 5: The alloy can be applied by thermal spraying, such as plasma spraying, or by HIP shaping. Abstract and paragraphs [0008] and [0017]--[0018].

'791 teaches all the features of these claims except (1) the "finely powdered" alloy and (2) the fusing of the coating.

However, Jaeger teaches coating a ferrous metal substrate with an alloy to provide a corrosion resistant coating. Column 1, lines 1-10. The substrate can be cast iron. Column 6, lines 30-40. The alloy coating is applied by thermal spraying. Column 5, line 60 through column 6, line 5 and column 6, lines 30-45. The coating is provided by spraying powder which would appear to be finely divided from the size ranges given. Column 5, line 60 through column 6, line 5. After the coating is applied by thermal spraying, the coating is heated to fuse the coating onto the substrate. Column 6, lines 15-20 and 35-45. This would heat the substrate as well, but not to the point of melting. Column 6, lines 15-20 and 35-45 (as the coating is shown as melting, not the substrate, which would be heated, however, from the contact with the hot alloy coating, at the least).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '791 to provide the alloy to be sprayed in the form of a "finely divided" powder as suggested by Jaeger in order to provide a desirable thermal spraying, because '791 teaches thermal spraying an alloy onto a cast iron substrate, and Jaeger teaches that when thermally spraying an alloy on a cast iron substrate, it is well known to be desirable to provide the coating material to be sprayed in the form of a finely divided powder. Furthermore, it would have been obvious to modify '791 to fuse the applied coating to the cast iron with heat as suggested by Jaeger in order to provide a desirably adhered coating, because '791 teaches thermal spraying an alloy coating onto a cast iron substrate, and Jaeger teaches that when thermal spraying an alloy coating onto a cast iron substrate, it is desirable to further fuse the coating to the substrate with heat.

9. Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over '791 in view of Jaeger as applied to claims 1 and 5 above, and further in view of Revankar (US 5879743).

'791 in view of Jaeger teaches all the features of these claims except (1) using the slurry coating (claim 2) and (2) the effective depth (claim 3). '791 does teach that the depth of thickness of the decarburized layer can desirably be about 0.5 to 1.5 mm. Paragraph [0015]. '791 also teaches that the alloy can be applied by welding padding or HIP shaping as well as thermal spraying. Paragraphs [0008] and [0018].

Revankar teaches that it is known to apply a wear resistant alloy coating to a cast iron part by a method using a slurry. Column 1, lines 60-68 and column 5, lines 25-40. A slurry is formed of "finely divided" wear resistant alloy powders, and this slurry is applied to a substrate.

Column 1, lines 60-68. Then the applied coating is fused to the substrate by heating the substrate and coating to a temperature below the melting point of the substrate but sufficient to cause the alloy to fuse. Column 8, lines 35-40 and column 9, lines 25-30.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '791 in view of Jaeger to use a slurry method of coating as suggested by Jaeger in order to provide a desirable coated product, because '791 teaches thermal spraying an alloy onto a cast iron substrate and that other methods such as HIP (hot isostatic pressing) can also be used to apply the alloy and Jaeger indicates the desire to fuse even thermal sprayed applied coatings, and Revenkar teaches that a desirable method for applying a wear resistant alloy onto a cast iron substrate is to apply a slurry followed by fusing. Furthermore, it would have been obvious to modify '791 in view of Jaeger and Revenkar to perform routine experimentation to optimize the depth of decarburization based on the article to be coated and the coating to be applied, as '791 provides desirable decarburization depths for coatings to be applied to barrels of extruders is to be in the 0.5 mm to 1.5 mm range, but as indicated by Jaeger and Revenkar, cast iron articles can also be used for other purposes, with other thicknesses of coating.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:30-4:00) with the First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P. Beck can be reached on (571) 272-1415. The fax phone numbers for the

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organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and for After Final communications.

Other inquiries can be directed to the Tech Center 1700 telephone number at (571) 272-1700.

Furthermore, information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


KATHERINE BAREFORD
PRIMARY EXAMINER